

**Notice of Allowability**

Application No.

10/691,302

Examiner

Joseph E. Avellino

Applicant(s)

DILLON, DOUGLAS M.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment dated 4/23/07.
2. ☒ The allowed claim(s) is/are 53-61.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

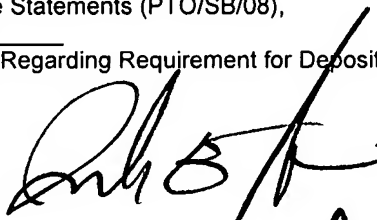
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☒ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
JOSEPH Avellino  
EXAMINER

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Please amend the claims as follows:

53. (Currently Amended) An apparatus comprising:

a protocol stack comprising an application layer, a network layer, and a physical layer, wherein said physical layer comprises a hardware interface between said apparatus and a network,

wherein network-level tunnelling of a packet from said network layer, the tunnelling creating a packet having a plurality of network layer source addresses and a plurality of network layer destination addresses, takes place in said apparatus below said network layer but above said physical layer,

wherein a driver operating in said apparatus below said ~~IP~~ network layer but above said physical layer effects the network-level tunnelling, and

wherein said driver is configured to generate a reply to an ARP packet received from the network layer of said apparatus.

54. (Currently Amended) An apparatus according to Claim 53, wherein said network layer is an IP layer.

wherein the plurality of network layer source addresses are a ~~respectively~~  
respective plurality of IP source addresses,

wherein the plurality of network layer destination addresses are a ~~respectively~~ respective  
plurality of IP destination addresses,

wherein said driver presents to said IP layer an ethernet driver interface, and

wherein said driver removes an ethernet header and an ethernet checksum from a packet  
received from said IP layer.

Please replace the Abstract with the following:

An apparatus including a protocol stack, the protocol stack including an application layer, a network layer, and a physical layer, wherein the physical layer comprises a hardware interface between the apparatus and a network, wherein network-level tunnelling of a packet from the network layer, the tunnelling creating a packet having a plurality of network layer source addresses and a plurality of network layer destination addresses, takes place in the apparatus below the network layer but above the physical layer, wherein a driver operating in the apparatus below the network layer but above the physical layer effects the network-level tunnelling, and wherein the driver is configured to generate a reply to an ARP packet received from the network layer of the apparatus.

***Oath/Declaration***

2. Applicant is now required to submit a substitute declaration or oath to correct the deficiencies set forth: the Oath does not refer to Applicant's claim to priority under 35 USC 120. The substitute oath or declaration must be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability" (PTO-37). Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136. Failure to timely file the substitute declaration (or oath) will result in **ABANDONMENT** of the application. The transmittal letter accompanying the declaration (or oath) should indicate the date of the "Notice of Allowance" (PTOL-85) and the application number in the upper right hand corner.

**REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance: The prior art of record does not provide for an apparatus which provides IP tunneling by a driver operating on a layer below a network layer and above a hardware layer which also responds to ARP requests. Although the response to ARP requests is well known to be done with an Ethernet driver see RFC 826, one of ordinary skill in the art at the time the invention was made would not find it obvious to do IP-within-IP encapsulation within this Ethernet driver. As discussed in Ioannidis, the IP encapsulation is conducted on the network layer (p.237, col. 2; p.239, section 2.5 'The Network Layer' conducts the IPIP

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encapsulation). The encapsulation conducted by the driver removes the Ethernet header, adding an IP header wherein the packet has both the tunneling IP header and the original IP header. The driver then recomputes the Ethernet checksum to coincide with the new IP header.

2. The closest prior art of record would be the Ioannidis reference and the newly cited Adams, Jr (USPN 5,444,782). Ioannidis does not provide that the IPIP encapsulation is done below the network layer as discussed above. Adams discusses IP tunneling in a gateway, however the invention is done at the layer at which IP packets are sent (Adams: col. 4, lines 55-60), which would be the Network layer. One of ordinary skill in the art would not find it obvious to incorporate this into the data link layer of the OSI model since it would remove too much of the routing information needed for the distributed routing approach many networks use as described in Adams (col. 4, lines 55-56).

3. The claims satisfy the requirements under 35 USC 101 since the apparatus claim 53 recites the execution of the driver on an apparatus, which does not attempt to claim software, per se. Apparatus claim 55 recites a hardware interface, which as construed in the art, would require some form of hardware, therefore making the claim statutory.

4. For these reasons, in conjunction with the other limitations of the independent claims, puts this case in condition for allowance.

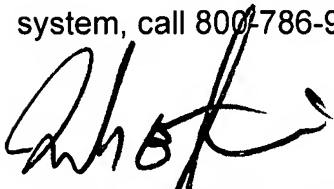
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph E. Avellino whose telephone number is (571) 272-3905. The examiner can normally be reached on Monday-Friday 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joseph E. Avellino, Examiner  
June 6, 2007

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wherein network-level tunnelling of a packet from said network layer, the tunnelling creating a packet having a plurality of network layer source addresses and a plurality of network layer destination addresses, takes place in said apparatus below said network layer but above said physical layer,

wherein a driver operating in said apparatus below said ~~IP~~ network layer but above said physical layer effects the network-level tunnelling, and

wherein said driver is configured to generate a reply to an ARP packet received from the network layer of said apparatus.

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wherein the plurality of network layer source addresses are a ~~respectively~~  
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wherein the plurality of network layer destination addresses are a ~~respectively~~ respective  
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wherein said driver presents to said IP layer an ethernet driver interface, and

wherein said driver removes an ethernet header and an ethernet checksum from a packet received from said IP layer.

Please replace the Abstract with the following:

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### **REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance: The prior art of record does not provide for an apparatus which provides IP tunneling by a driver operating on a layer below a network layer and above a hardware layer which also responds to ARP requests. Although the response to ARP requests is well known to be done with an Ethernet driver see RFC 826, one of ordinary skill in the art at the time the invention was made would not find it obvious to do IP-within-IP encapsulation within this Ethernet driver. As discussed in Ioannidis, the IP encapsulation is conducted on the network layer (p.237, col. 2; p.239, section 2.5 'The Network Layer' conducts the IPIP encapsulation). The encapsulation conducted by the driver removes the Ethernet header, adding an IP header wherein the packet has both the tunneling IP header and the original IP header. The driver then recomputes the Ethernet checksum to coincide with the new IP header.

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A handwritten signature in black ink, appearing to read 'Joe Avellino', is written over the printed name.

Joseph E. Avellino, Examiner  
June 6, 2007